REMARKS

Claim 11 is amended to correct the dependency from Claim 24 to Claim 10. This is believed to overcome the rejection of Claim 11 under 35 U.S.C. § 112.

Applicant's claimed invention is a *synthetic cork closure for a liquid container.* Applicant points out in the specification at page 1, lines 9- 15 that synthetic cork closures (corks comprising polymers) are known. The problem taught is that these corks have "uncontrolled permeation of gases in and out of the cork and the scalping of flavors caused by the polymers used." (Specification at page 1, lines 14-15) Then Applicant's invention addresses the improvement of providing "synthetic corks that have high resistance to the permeation of gases in and out of the cork." (Specification at page 1, lines 16-17) For that reason, Applicant's corks have at least a portion of the synthetic cork closure coated with a gas impermeable polymer coating composition. The coating is of the type that is obtained when the coating process is selected from the group consisting of analox gravure coating, offset coating, pad print coating, screen coating, stencil coating, brush coating, spray coating, pouring, painting, rolling, dipping, dripping a composition containing the gas impermeable polymer onto the surface of the cork, and combinations thereof. These processes provide penetration into the synthetic cork as shown in Applicant's examples of the invention. The penetration results in, among other features, difficulty separating or removing the coating from the synthetic cork closure, again as shown in Applicant's examples of the invention. These examples do make a showing of the effect of the processes involved and of the effect of solvents followed by evaporation, as contrasted with methods that do not have this result and could be more easily separated.

Claims 1, 3-8, 10, 11, and 13 stand rejected under 35 U.S.C. § 103 as unpatentable over GB 1087801 (Sheller) in view of Burns (US 5,710,184). Sheller is alleged to teach a cork gasket with a coating of acrylic modified vinylidene chloride copolymer to lower vapor transmission. One coating, Rhoplex R-9 is alleged to read on the polymer of Claim 6. The plasticizer is alleged to read on a thixotropic agent as in Claim 10 and following. The coating is alleged to be applied to the entire outer surface "of a cork" and to be applied by immersion or spray coating and drying in a heating oven. The Office acknowledges that Sheller does not teach synthetic cork, but alleges that Burns teaches that natural cork suffers certain problems and that a molded closure may be used to replace cork. The Office alleges it would be obvious to substitute the synthetic cork of Burns for the cork of Sheller. The motivation to combine the references is that synthetic cork has improved characteristics as taught by Burns.

Sheller teaches that **gaskets** made of natural cork must provide an "effective seal between adjacent elements when positioned therebetween ..." (Page 1, lines 15-16) Sheller goes on to say that "applications require these cork gaskets be able to withstand relatively high temperatures and pressures and have a good oil and grease resistance." (Page 1, lines 26-29) In lines 29-32, Sheller goes on to say "Often the fluid pressures and temperatures exceed those against which untreated cork would be effective." Then Sheller points out the effect of detergents in present day lubricating

oils that tend to attack untreated gaskets in lines 32-33. To solve these problems noted with natural cork gaskets, Sheller teaches the use of an emulsion of an acrylic modified vinylidene chloride copolymer. In lines 44-45, Sheller notes that plasticizers are used to increase flexibility. On page 1, at lines 48-52, Sheller clearly states the applicability of their invention, "The gaskets to which the present invention relates include, as described above, those used to provide a fluid and vapour seal between confronting faces of adjacent machine elements." Further Sheller states that these are in sheet form at line 56 of page 1. Again, at line 74 these gaskets are referred to as "sheet articles." At lines 82-85, Sheller specifically teaches, "It is important that the gaskets be completely covered with this emulsion; this may require several coats of the liquid emulsion ..." On page 2 at line 24, Sheller again points out that plasticizer results in increased flexibility and at line 34 names dibutyl phthalate as a plasticizer.

First, the teachings of Sheller are not applicable to the present invention. They are in different field of art. Applicant's invention relates to synthetic closures for liquid containers. Examples are polymeric "corks" for wine bottles. Sheller's teachings involve sheet form gaskets made of natural cork that are placed "between confronting faces of adjacent machine elements."

There are clearly two different meanings of the word "cork." One cannot be substituted for the other merely because a computer word search retrieves both. Sheller is addressed to natural cork gaskets. In that reference, the term "cork" is clearly used in the sense of natural cork, the outer bark of certain trees. In Applicant's claimed invention, cork is used in the sense of a type of closure to e.g. a bottle. The fact that the same word is used in a reference but with a different meaning does not make the téachings of one apply to the other. See In re Glaug, 62 U.S.P.Q.2d 115, 12002 U.S. App. Lexis 4246, 8-12 (Fed. Cir. 2002).

> It is well established that when a general term is used to introduce a concept that is further defined more narrowly, the general term must be understood in the context in which the inventor presents it. *Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998)* ("This rule of construction recognizes that the inventor may have imparted a special meaning to a term in order to convey a character or property or nuance relevant to the particular invention.")... We thus agree with Glaug that the Nomura reference does not present a prima facie case of obviousness ...

Thus, teachings applicable to natural "cork" gaskets cannot be applied to synthetic "corks" just because the same word is used for two different concepts. Moreover, teachings regarding even natural cork stoppers and synthetic cork closures are not interchangeable. Synthetic corks have already been introduced to solve the problems of natural corks like not conforming to the neck of a bottle well enough to seal, introducing flavors, or crumbling when inserted or removed, thus contaminating the liquid in the container. Since they are even more dissimilar, natural cork gaskets and synthetic closures for liquid containers are not interchangeable. Nor are the teachings applicable to one applicable to the other.

The environments of the two are different. The gaskets are used between confronting faces of adjacent machine elements according to page 1, lines 50-52 of Sheller. The gaskets in Sheller are said to need lowered vapour transmission and good

oil and grease resistance in situations of high temperature and exposure to detergents that are in modern lubricants. (See page 1, lines 24-35.) Synthetic cork closures for liquid containers are e.g. in the necks of bottles. Environments found within machines or engines are not expected in liquid containers suitable for closures described as corks, e.g. bottles.

The materials involved are different. Natural cork is the bark of a tree. It is generally irregular in composition, may introduce off odors or flavors, especially if bleached or treated, often crumbles, and often lack the resilience to return to a shape after being deformed. It is subject to mold growth. Synthetic materials suitable for making closures for liquid containers are generally polymers (plastics). Porosity would depend on construction, e.g. open or closed cell foam, whether there is a skin, and the like. Composition is generally homogeneous. Flavors and odors can be avoided. Crumbling would be rare. Resilience and resistance to growing mold would be expected. Synthetic corks can be more consistent in such properties as expansion and contraction than a natural product like natural cork. However, as Applicant has noted, gas permeation can be a problem with synthetic closures for liquid containers.

The problems faced by the references are very different. The gaskets in Sheller are said to need lowered vapour transmission and good oil and grease resistance in situations of high temperature and exposure to detergents that are in modern lubricants. (See page 1, lines 24-35.) This situation is unlike that expected for synthetic cork closures for liquid containers. Applicant pointed out the problem faced in the specification at page 1, lines 14-15 namely "uncontrolled permeation of gases in and out of the cork and the scalping of flavors caused by the polymers used." In the examples of the invention, the exemplary gas is oxygen. Thus, one skilled in the art of synthetic corks would not look to the art on treating natural cork gaskets needing resistance in situations of high temperature and pressure and exposure to detergents that are in modern lubricants to solve the problem of e.g. a wine bottle cork that exhibits "uncontrolled permeation of gases in and out of the cork and the scalping of flavors caused by the polymers used."

It is also noteworthy that Sheller describes the gaskets therein as sheet form, a shape seldom associated with corking liquids in containers.

In summary, those skilled in the art of synthetic closures for liquid containers such as wine bottles would not look to the art of machine gaskets to solve the problems encountered with a synthetic, but not natural, cork. Major differences include:

Subject matter: closures for containers of liquid v. gaskets for machinery
Material: synthetic (plastic, polymeric) v. natural cork
Environment: containers of liquid v. machinery with heat and pressure
Problems to be solved: synthetic closures to liquid containers, while solving the problems of natural corks used to close liquid containers, have the problem of "uncontrolled permeation of gases in and out of the cork and the scalping of flavors caused by the polymers used." v. Sheller's solution for the problem of natural cork gaskets needing to withstand

> relatively high pressures and temperatures, e.g. between confronting faces of adjacent machine elements.

Burns teaches the manufacture of certain synthetic cork closures for liquid containers where a thermoplastic elastomer (TPE) exemplified by a styrene block copolymer (column 4, lines 6-39) and a blowing agent are molded such that a skin is formed (column 1, line 65 through column 2, line 2). The resulting synthetic stopper is said to offer high resistance to oxygen permeation and produce little or no product tainting. (Column 2, lines 34-35) It is described further as "able to prevent passage of oxygen from the atmosphere to the wine, while simultaneously substantially absorbing oxygen from the wine or the air space within the wine bottle…" (Column 3, lines 27-30)

While Burns, teaching synthetic cork-type closures for liquid containers, is analogous art to Applicant's claimed invention, it is not analogous to Sheller. Also, the teachings of Burns indicate that those closures do not suffer from the problem stated by Applicant. Therefore, the teachings of Burns would not be combined with those of Sheller by those skilled in the art; nor would teachings of Burns motivate one to reach Applicant's claimed invention.

Burns, in teaching that his corks offer high resistance to oxygen permeation and produce little or no product tainting and are "able to prevent passage of oxygen from the atmosphere to the wine, while simultaneously substantially absorbing oxygen from the wine or the air space within the wine bottle…" teaches away from a need to coat. Applicant clearly teaches that the reason for coating is when synthetic corks have "uncontrolled permeation of gases in and out of the cork and the scalping of flavors caused by the polymers used." (Specification at page 1, lines 14-15) Then Applicant's invention addresses the improvement of providing "synthetic corks that have high resistance to the permeation of gases in and out of the cork." (Specification at page 1, lines 16-17) Burns states that his corks already have this feature, thus does not motivate coating.

Certainly, the container closures of Burns are not expected to encounter the conditions of high heat and pressure and detergents in lubricants described by Sheller as the reason for coating gaskets.

The Office alleged that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the synthetic cork taught in Burns in place of the cork taught in Sheller. The motivation for doing so is that the synthetic cork has improved characteristics with regard to color, dimensional stability, crumbling, and cost." **(1)** This substitution would not be obvious because the problems of color, dimensional stability, crumbling, and cost experienced in bottle corks and addressed by Burns do not address the problems experienced by natural cork in the gaskets of Sheller, namely the need for lowered vapour transmission and for good oil and grease resistance in situations of high temperature and pressure and exposure to detergents that are in modern lubricants. **(2)** Similarly, problems of color and odor addressed by Burns are not expected to be significant problems in gasket situations. **(3)** The substitution would not be obvious because bottle stoppers and

gaskets are so different that those skilled in the art of one don't think of using art in so different a field, especially when the problems are to be solved are so different. **(4)** Substituting the thermoplastic elastomer (TPE) of Burns into the gasket of Sheller, puts a plastic known to be moldable at 300-500 °F (Burns, column 6, line 46) in an environment known to need "good oil and grease resistance in situations of high temperature." (Sheller, page 1, lines 27-29) One notes that 300-500 °F is very close to normal household cooking temperatures of about 300-450 °F. Sheller teaches on page 1, lines 29-32, "Often the fluid pressures and temperature existing in modern processes quite exceed those against which untreated cork would be effective." Thermoplastic elastomers melt and are, thus, illogical in high temperature environments. Therefore, "to utilize the synthetic cork taught in Burns in place of the cork taught in Sheller" would introduce a TPE into an environment where it might melt, depending on the level of the high temperature and pressure encountered.

Furthermore, utilizing the synthetic cork taught in Burns in place of the cork taught in Sheller as alleged by the Office would not yield Applicant's claimed invention or render it obvious. Using the synthetic materials of Burns in place of the natural cork in Sheller would have resulted in a **gasket** of thermoplastic elastomer. A gasket made from TPE and coated according to the teachings of Sheller is still quite different from a synthetic cork closure for a liquid container, even from a coated closure.

There is no teaching or suggestion that a coating of Sheller would stick to or otherwise be expected to be effective on a TPE.

Correctly, the Office has not even alleged motivation for introducing the coating of Sheller into the teachings of Burns. There is none. Since Burns very clearly says that he has achieved resistance to oxygen permeation and little or no product tainting (column 2, lines 34-35) a stopper "able to prevent passage of oxygen from the atmosphere to the wine, while simultaneously substantially absorbing oxygen from the wine or the air space within the wine bottle..." (Column 3, lines 27-30) there is no motivation to add a coating from Sheller. Furthermore, that coating, according to Sheller, is to impart lowered vapour transmission and good oil and grease resistance in situations of high temperature and exposure to detergents that are in modern lubricants. This is not needed in wine bottle corks addressed by Burns. There would be no reason to expect the synthetic cork closures to encounter the conditions found in machinery that motivate the use of the coating disclosed in the teachings of Sheller.

Thus, the combination of Sheller and Burns as described by the Office is not motivated and does not teach or suggest Applicant's claimed invention. Therefore, there is no prima facie case of obviousness. Claims 1, 3-8, 10, 11, and 13 are not obvious under 35 U.S.C. § 103 over GB 1087801 (Sheller) in view of Burns (US 5,710,184). Rather, the claims are patentable.

Claim 3 further requires that both ends of the closure are coated with the gas impermeable polymer. Sheller teaches, "it is important that the gaskets be completely covered with this emulsion. This may require several coats ..." Such a statement does not teach or suggest coating both ends of a closure. Burns teaches no coatings;

thus, together the references cannot teach or suggest a cork-type closure with both ends covered. Thus, no prima facie case of obviousness has been made. No prima facie case of obviousness has been made. Claim 3 is patentable.

Claim 6 further requires that the gas impermeable polymer is a vinylidene chloride polymer which is (1) a copolymer of (a) from about 80 to about 93 mole percent vinylidene chloride and (b) from about 20 to about 7 mole percent of at least one monoethylenically unsaturated monomer copolymerizable therewith or (2) a copolymer of (a) from about 65 to about 75 mole percent vinylidene chloride and (b) from about 35 to about 25 mole percent of at least one monoethylenically unsaturated monomer copolymerizable therewith. The Office says that Rhoplex R-9 is "herein understood to read n(sic) the polymer of claim 6." **Applicant respectfully requests a reference substantiating that understanding as required CFR §1.104 (d)(2).** Chemical identity of a Rhom and Haas trademarked (past?) product is not something that Applicant would have special knowledge of. Applicant therefore disputes the allegation that Rhophex R-9 reads on the polymer composition in Claim 6 because there is no evidence that it does so. Without such a teaching, no prima facie case of obviousness has been made.

Similarly, Claim 10 requires a gas impermeable polymer coating composition comprising from about 5 weight percent to about 20 weight percent of a vinylidene chloride polymer, from about 70 weight percent to about 90 weight percent of an organic solvent or blend of organic solvents and from about 5 weight percent to about 10 weight percent of a thixotropic agent. No teaching of an offered reference indicates that Rhoplex R-9 or any other material described in the text of either reference reads on this composition. **Applicant respectfully requests a reference teaching this composition as required by CFR §1.104 (d) (2).** Without such a teaching, no prima facie case of obviousness has been made. Claim 10 is patentable.

Furthermore, Claim 10 also requires a thixotropic agent. The Office's only justification for rejecting this claim is "The coating may further comprise a plasticizer, herein relied upon to read on the claimed thixotropic agent, in amounts of 1-10 wt%." **Applicant disputes this allegation and respectfully requests a reference showing the interchangeability of plasticizers and thixotropic agents as required by CFR §1.104 (d) (2).** Proper examination requires references to substantiate mere allegations of interchangeability or reading upon. Mere assertion does not render it true that A reads on Q. Without such a teaching, no prima facie case of obviousness has been made. Claim 10 is patentable.

Despite the allegation that thixotropic agents are taught by the plasticizers in Sheller, **plasticizers are completely different from thixotropic agents**. As is well known in the art and stated twice by Sheller, plasticizers enhance flexibility of solid plastics. (See Sheller page 1, lines 44-45 and page 2, line 24.) In contrast, thixotropic agents are well known among those skilled in the art to control the rheology of fluids. They are functional additives providing a special combination of thinning under shear and thickening in the absence of shear (e.g. stirring). Aside from the facts that a plasticized solid plastic cannot be stirred and a thixotropic fluid cannot be plasticized, the differences are evident from the examples offered of each. Sheller exemplifies

plasticizers with dibutyl terephthalate, and typically plasticizers are exemplified by (liquid) phthalate diesters. In contrast, thixotropic agents are exemplified by fumed silica, kaopolite, bentonite, talc and mixtures thereof. Those skilled in the art would know very well that thixotropic agents and plasticizers have very different uses, are different substances, and are usually effective in different physical states and would not expect either to be effectively substituted for the other.

As evidence of the meanings known to those skilled in the art, Applicant submits a definition of plasticizer from Lange's Handbook of Chemistry 15th ed. on-line at http://www.knovel.com/knovel2/Toc.jsp?BookID=47&VerticalID=0&SubjectAreaID=-2&FromSearch=true&ShowHitsOnly=true

> **10.2.9 Plasticizers**
> Plasticizers are relatively nonvolatile liquids which are blended with polymers to alter their properties by intrusion between polymer chains. Diisooctyl phthalate is a common plasticizer. A plasticizer must be compatible with the polymer to avoid bleeding out over long periods of time. Products containing plasticizers tend to be more flexible and workable.

and a definition of thixotropy from allwords at http://www.allwords.com/word-thixotropy.html

> **thixotropy**
> noun
> 1. *physics.*
> The property of certain fluids, especially gels, which show a decrease in viscosity when stirred or shaken, e.g. non-drip paints.

The definition from allwords of plasticizer is less informative than that from Lange's but is entirely consistent:

> **plasticizer**
> **plasticiser**
> *noun*
> 1. *chem.*
> An organic compound that is added to a rigid polymer in order to make it flexible and so more easily workable.

Applicant also disputes the idea that solvent is impliedly irrelevant as a "method" step. Those skilled in the art would recognize that preferred solvents result in homogeneous solutions which not only penetrate well to give good adhesion as shown in the Examples of Applicant's invention, but also leave homogeneous coatings which would be desirable in not having lumps or gaps that might result in poor seal or increased gas transmission or possibly in poor adhesion and flakes of coating in the liquid within the container. It is often particularly difficult to effectively coat one polymer on another. Solvent appears to result in penetration that avoids separation, e.g. peeling.

Similarly, Applicant submits that Applicant's Examples of the invention show that processes of the nature listed in Applicant's Claim 1 are effective to produce a closure with a strongly adhering coating as compared with a coating that would easily separate from the synthetic cork closure.

Claims 2 and 9 stand rejected under 35 U.S.C. 103(a) as obvious over Sheller in view of Burns as applied to Claims 1, 3-8, 10, 11 and 13 in further view of W096/28378 (Dewar). Sheller in view of Burns is alleged to teach coating of a cork. Dewar is alleged to add that only a single surface is coated. The alleged motivation to combine these references would be to reduce cost.

Reducing the cost by coating less than the entire surface is not a motivation obtained from the references as required.

Claim 2 requires that only one end of the closure is coated with gas impermeable polymer. Claim 9 requires that the closure is coated using a process which comprises inserting a synthetic cork closure into a container, applying onto the free end of the synthetic cork closure a coating composition comprising a vinylidene chloride polymer dissolved in a solvent and allowing the solvent to evaporate.

All of the previous remarks regarding the combination of Sheller and Burns show that this combination is improper. It cannot, therefore, be relied upon to teach coating of a synthetic cork closure for a liquid container.

Dewar teaches use of a coating of a **liquid** impermeable substance on a natural cork bottle closure, particularly a natural cork which is low quality or made of cork particles glued together. (Page 1, lines 12-16) The purpose is to avoid having off flavors from chemicals used to bleach the natural cork or to glue the particles of cork together. (Page 1, lines 5-11 and 15-16, respectively) Dewar teaches on page 3, at lines 3-5, "The coat(s) may only be applied to a portion of the surface of the mass of cork. For example, the coat(s) may only be applied to the face(s) of the closure that is likely to contact the contents of the container."

There is no motivation to combine these references despite the Office's assertion that "the motivation for doing so would have been to reduce cost." Reducing costs would not cause one skilled in the art to look to the teachings regarding avoiding off flavors from natural cork bottle closures to decide how to reduce costs of gaskets coated to make them more resistant to high temperatures and pressures and detergents in lubricants. Those skilled in the art would notice that Sheller taught, "It is important that the gaskets be completely covered with this emulsion; this may require several coats of the liquid emulsion ..." (Page 1, lines 82-85) That statement teaches away from adopting the single isolated teaching of Dewar, which is nonanalogous art to Sheller (bottle corks v. gaskets), and is dealing with different materials (synthetic v. natural cork) from those of Burns and problems different from those of Burns.

Since those skilled in the art would not be motivated to combine such dissimilar art and to ignore the very specific teachings against coating less than the complete surface in the primary reference, no prima facie case of obviousness has been shown against Claims 2 and 9. Claims 2 and 9 are patentable.

Furthermore, Claim 9 requires that the closure is coated using a process which comprises inserting a synthetic cork closure into a container, applying onto the free

end of the synthetic cork closure a coating composition comprising a vinylidene chloride polymer dissolved in a solvent and allowing the solvent to evaporate. This means that the closure would be coated on the outside (typically top) end. This is the opposite of the teaching of Dewar, which requires that the end "likely to contact the contents of the container" be coated. The inside (typically bottom) end of a cork closure contacts the liquid. **A free end (outside) coating (Claim 9) would not avoid contamination of the liquid by the cork.** Those skilled in the art are not motivated to combine the references and much less likely to ignore the teachings away from the claimed invention in both Sheller that all surfaces must be coated as well as teachings in Dewar that the surfaces most likely to contact the liquid be coated. Thus, no prima facie case of obviousness has been made. Claim 9 is patentable.

Claim 12 stands rejected under 35 U.S.C. 103(a) as obvious over Sheller in view of Burns as applied to Claims 1, 3-8, 10, 11, and 13 further in view of US 4,320,047 (Murphy). Sheller is alleged to teach that the coating may comprise a thixotropic agent, but not explicitly silica. Murphy is alleged to teach silica as a known thixotropic agent. It is alleged that one can utilize the thixotropic agents taught in Murphy as the thixotropic agent taught in Sheller. The motivation is alleged to be that silica is a known thixotropic agent.

Murphy deals with the problem that "when fumed silica is added to a system containing an amine terminated reactive liquid polymer (ATRLP) and an epoxy resin in sufficient amount to produce the desired thixotropic characteristic, such a system would retard both the gel time and cure. However, when levels of fumed silica were reduced to where the gel time of the ATRLP/epoxy systems was not affected, the systems did not exhibit sufficient thixotropic characteristics." (Column 1, lines 13-21) Murphy solved this problem by addition of a solid mildly alkaline material, such as aluminum silicate clay or calcium carbonate filler, to thixotropic ATRLP/epoxy systems containing fumed silica to accelerate gel times of such systems. (Column 1, lines 40-44)

First, as shown previously, Sheller does not teach that the coating may comprise a thixotropic agent. **Sheller teaches that his coating may include a plasticizer, known by those skilled in the art to be completely different from a thixotropic agent as previously explained.**

Second, there is no motivation to combine the teachings of Sheller, Burns and Murphy as suggested by the Office. The Office alleges, "The motivation for doing so is that silica is a known thixotropic agents(sic)." This does not explain motivation to combine Sheller regarding natural cork gaskets, Burns regarding synthetic bottle closure corks and Murphy regarding amine terminated reactive liquid polymer (ATRLP) and an epoxy resin with fumed silica. Applicant is unable to find anything in Murphy regarding gaskets or closures for containers, and, in fact, no such relationship is alleged. Without any motivation to add a thixotropic agent to a gas impermeable polymer composition, particularly a vinylidene chloride copolymer composition as described in Claim 12, there is no prima facie case of obviousness. Mere assertion that plasticizers read on thixotropic agents does not serve to equate the two very different functional additives.

Also, the combination of Sheller and Burns is improper as previously shown and cannot be relied upon to teach the basic coating of a synthetic closure of a liquid container.

Thus, since no prima facie case of obviousness has been made regarding any of Applicant's claims, Claims 1-13 are patentable. Applicant respectfully requests allowance of Claims 1-10 and 11-13 as filed and Claim 11 as amended herein at the Office's earliest convenience.

Respectfully submitted,

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